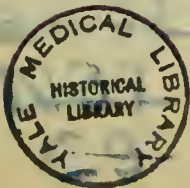




ON SOME ASPECTS OF
INFANT MORTALITY IN NEW HAVEN

DURING THE FIVE MONTHS ENDING NOV. 1, 1884.

By E. H. JENKINS, Ph.D.



Compliments of

EDWARD H. JENKINS.

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Statistics of Infant Mortality have special interest and value, particularly in a study of the prevalence of zymotic diseases. The reasons are these: 1. Infants are more susceptible than adults to the attacks of such diseases and they have less power to resist and throw them off. 2. They are largely dependent on milk as an article of diet, which is a common vehicle for the spread of infection. 3. They are uniformly and continuously exposed to the sanitary influences of their own homes, and consequently their condition more accurately reflects those influences than does the condition of adults who may be employed away from their homes most of the day and only return to them to eat and sleep.

During the period named in the title of this paper 259 children who were born alive died under five years of age* in the city of New Haven. This does not include the deaths in Hamden, Westville, the "Annex," or on shipboard, and for this reason there will be a slight discrepancy between the figures here given and those of the Registrar of Vital Statistics. To get a proper idea of the significance of this number of deaths, it should be compared with the total number of infants in the city. It is not possible from data at hand to determine the precise number and only an approximate statement can be given.

During the five years ending Jan. 1, 1884, there were registered in the city 10,120 births and 2,112 deaths of infants, which would leave about 8,000 infants living in Jan. 1884, assuming that as many had moved into the city as had moved out of it. There is always a preponderance of unrecorded births over unrecorded deaths, which would tend to make the actual infant population

* For the sake of brevity in the present paper the word infant will be used to mean a child under five years old.

larger than that given above; on the other hand the number will be lessened by leaving out of account the infants born in the suburbs named, which should be done because the deaths in those places have been omitted.

Another estimate is as follows: By the census of 1880, 10.1 per cent. of the inhabitants of Connecticut were under five years of age. The population of New Haven* is at present about 73,600, so that the number of infants might be estimated at about 10.1 per cent. of this or 7,430. We may without chance of great error assume that there are between 7,500 and 8,000 infants in the city. Of these, 259 died in the five months named. That is, about 33 infants in every 1,000, or on the average one infant in every 30 perished during the warm season within a period of less than half a year.

Early in the summer the writer undertook for quite another purpose to learn what proportion of the infants who died of diarrhœal troubles in the city of New Haven had been brought up by hand, but he soon determined to enlarge the object of inquiry, to make as far as possible personal inspection of each house and to gather statistics on several other points concerning infants who had died of diarrhœa. Limitation of the scope of inquiry was necessary because it was impossible for him to take time to examine into every case of death although realizing that it was desirable. Infantile diarrhœa was selected because more than twice as many infants died from that as from any other class of diseases and because it is an ailment which can be largely prevented by proper precautions.

Inquiry was made as to age, color, sex, nature of the disease, duration of illness, date of death, residence, number of families in the house, whether the street was sewered, the house connected with the sewer, whether well water was used for drinking, what is the distance of cesspools and privies from the well, whether the child was nursed wholly by the mother, if not, how long was it so nursed, if bottle-fed what was its food, and what were the general sanitary surroundings in each case.

Some of these particulars were learned from the death certificates and verified by inquiry of the parents. Particulars relating to sewers and house connections were supplied by the city engineer, Mr. A. B. Hill, whose kindness in this and other matters relating to the work it is a pleasure to acknowledge.

* Exclusive of the "Annex" and Westville.

In themselves considered, no great value is claimed for the few statistics given in this paper, gathered in one city and in the fraction of a single year. The value of the inquiry will of course increase if it is possible to carry it on during a term of years. The results, however, agree in their indications with all statistics of the same kind which have been gathered in a large number of places and through long periods of time by more skillful observers.

Here follow the results of the inquiry :—and it should be borne in mind that when not otherwise stated they include only the deaths from infantile diarrhœa.

STATISTICS OF INFANT MORTALITY IN THE CITY OF NEW
HAVEN FROM JUNE 1 TO NOV. 1, 1884.

I. AGE.

Deaths under 1 month,	7	Deaths between 6 and 7 mos.,	10
“ between 1 and 2 mos.,	12	“ “ 7 “ 8 “	9
“ “ 2 “ 3 “	9	“ “ 8 “ 9 “	7
“ “ 3 “ 4 “	5	“ “ 9 “ 10 “	5
“ “ 4 “ 5 “	14	“ “ 10 “ 11 “	3
“ “ 5 “ 6 “	9	“ “ 11 “ 12 “	6
Total number of deaths under 1 year,			96
Number between 1 year and 18 months,			12
“ “ 18 months and 5 years,			3
Total number,			<hr/> 111

It will be seen that almost exactly one-quarter of the deaths were within three months from birth, one-half within six months, three-quarters within nine months and more than four-fifths within one year. This observation agrees with the well-known fact that the chances of life increase rapidly from month to month during the first year and that fatal cases of disease in the digestive organs are much more common in the first year than later.

Indeed if the writer were to do the work again he would be inclined to limit the inquiry to babes in arms or babes under one year of age, for the mortality as far as diarrhœal trouble is concerned is almost wholly in that class; and again children of the very poor get out of their homes into the open air for a good part of the time almost as soon as they can walk, and their mortality no longer has any *special* value as an index of the sanitary condition of the homes themselves.

II. COLOR, SEX AND NATIONALITY.

Though without special significance in the present inquiry it may be noted in passing that 58 of the infants were males and 53 females.

36 were of American parentage, that is, both parents were born in this country, 19 were Irish, 16 were German, 8 were Irish-American and the rest were various, no two alike. There were two deaths of Italian and two of negro children.

III. NATURE OF THE DISEASES.

NUMBER OF INFANT DEATHS AND THE CLASSES OF DISEASES CAUSING THEM.

	June.	July.	Aug.	Sept.	Oct.	Total.	Per cent. of Total Number.
Zymotic Diseases,*	3	5	6	4	6	24	9.2
Constitutional Diseases,	1	4	2	2	1	10	3.9
Local Diseases,*	16	8	10	5	16	55	21.2
Developmental Diseases,	8	7	9	3	6	33	12.8
Infantile Diarrhœa,	8	61	25	13	4	111	42.9
Ill defined,	1	4	9	3	3	20	7.7
Unknown,	2	0	2	2	0	6	2.3
Total No. deaths in each mo.	39	89	63	32	36	259	100.0

Zymotic Diseases include all contagious and infectious diseases;—croup, diphtheria, whooping cough, scarlet fever, as well as cholera infantum.

Constitutional Diseases are those “arising from some tendency to morbid development impressed on the cells of nutrition, but independently of any communication from without;” such as scrofula, dropsy, and consumption.

Local Diseases are those “in which the functions of particular organs and systems are disturbed or obliterated with or without inflammation.” Here are classed convulsions, pneumonia, heart disease, and others.

Developmental Diseases are those which are incident to and characteristic of the period of life; such as premature birth, inanition and teething.

Ill defined Diseases were marasmus and marasmus with some complication.

* Other than those classed with Infantile Diarrhœa.

In this table cholera infantum, which alone caused 66 deaths, has been removed from the other zymotic diseases and with it have been classed under the general name of *Infantile Diarrhœa* a number of other diseases of the digestive organs, mostly diarrhœa and "entero-colitis."

There are at least two classes of diseases which are regarded by sanitarians as in a special degree "preventable," the local and the zymotic diseases, which together include all cases of infantile diarrhœa. The prevention of local diseases rests with the individuals themselves; it is a matter of *personal* hygiene. *Public* hygiene aims to diminish the deaths from zymotic diseases, which are appropriately called also "filth diseases" because they are to a great degree induced, aggravated and disseminated by filth.

It will be seen from the table, that over one-half of the whole number of infant deaths resulted from diseases of these two classes; that nearly 43 per cent. were caused by infantile diarrhœa, and that the warmest months, July and August, were the ones most fatal to infants.

IV. DURATION OF ILLNESS AND DATE OF DEATH.

June,	7 cases,	average duration,	4 days
July,	57 "	" "	11 "
August,	15 "	" "	21 "
September,	13 "	" "	29 "
October,	3 "	" "	24 "

It is noticeable that the average length of illness increased through the summer months and September.

Possibly this fact may indicate that the weakest children were earliest attacked and yielded most readily to disease.

A comparison of the dates of death from diarrhœa and the mean temperature on those dates shows no very direct connection between them. The same is true of the months taken together and their average temperature. Thus the average temperature in June was 66.8°, in July only 1° higher, yet there were only 8 deaths in June and 65 in July. The average August temperature was 69.1°, or more than a degree higher, but the deaths were 25 as against 65 in July. From the 3d to the 10th of September we had more continuous hot weather and a higher mean temperature (76.2°) than at any other time in the year but during that time only 7 died. It is true, however, that the rate of infant mortality

increases rapidly as the warm weather comes on, and decreases again more slowly in the cooler fall weather.

If, as is held by some writers, cholera infantum is caused by emanations from the polluted soil or from cesspools which only become specifically poisonous at a certain temperature (57° F. has been named), then we should not expect sudden oscillations in the mortality coinciding with sudden thermometric changes. But considerable warm weather may be necessary to heat the ground, whose temperature rises but slowly with an increase in the air temperature, to the point where these emanations are evolved abundantly. Then we should expect to see, as we did last July, the maximum effect of cholera infantum at once, killing all its weaker victims at the first onslaught and then breaking down more slowly those who had greater power of resistance.

VII. RESIDENCE.

When the places where these infants died of diarrhœal troubles are marked on a map of the city, several significant facts are noted ; among them these :

1. The deaths are not evenly distributed over the total area of the city, nor according to the density of population.

The following table will make this clear :

DEATHS IN THE SEVERAL WARDS, POPULATION AND DEATH-RATE.

Number of Ward.	Area in acres.	Population.	Density of population. Number per acre.	Number of deaths.	Deaths to 1,000 inhabitants.
1	176	5,313	30.2	5	5.6
2	547	5,997	10.9	12	12.0
3	322	7,499	23.3	18	14.4
4	514	8,429	16.4	10	7.1
5	232	5,137	22.1	2	2.3
6	167	5,893	35.3	8	8.1
7	154	8,035	52.1	9	6.7
8	485	4,944	10.2	4	4.9
9	1,034	7,128	6.9	8	6.7
10	602	6,122	10.1	6	5.9
11	303	4,248	14.0	6	8.5
12	819	4,919	6.0	13	15.9
	<hr/> 5,355	<hr/> 73,664		<hr/> 101	

It should be noted that in the tenth ward there are the almshouse in which three babes died in these months and a "Children's Home" where four died. These have been omitted from the number of deaths in that ward for this comparison. There are three other deaths unaccounted for in the table because it is not possible at this time to decide in which ward they occurred.

The statistics of area were kindly furnished by the City Engineer. The population was estimated in the following way. The census of 1880 showed that the number of school children between the ages of six and sixteen was to the total population as 1 to 4.416. A census is yearly made of the school children and from this the total population is reckoned by multiplying the number of school children by the factor 4.416. The results of this year's census have not yet* been published, but it is stated by the Secretary of the School Board that the estimated gain over last year in total population is about eight hundred and that this gain is wholly in wards 1 to 12. The total estimated population in these wards is then 73,664. Having the number of registered voters in each ward the population is figured for each ward in proportion to its voting population. The figures of course are only an approximation. The death rate is figured on 6,000 instead of 1,000 inhabitants as the wards average 6,000 inhabitants.

On referring to the table it is seen that the seventh ward, which has by far the densest population, fifty-two to the acre, has a lower death rate than six of the others. The sixth ward, which comes next in density of population, thirty-five to the acre, has a lower death rate than four of the others. On the other hand the twelfth ward, which has the scantiest population per acre (only six) has the very highest death rate, 15.9, and this is followed by the third ward with a death rate of 14.4, while its population is not one-half as dense as that of the seventh ward.

Even this table does not give a fair idea of the unequal distribution of deaths, for the wards are political, not sanitary divisions, and some parts of several wards are much healthier than other parts of the same wards, and differ also in the density of population.

There are two quite distinctly bounded regions of the city in which these diseases have taken almost all their victims. One is bounded by a line beginning at the corner of Crown and State

* January, 1885.

streets, running out State street in a straight line across Whiting, Meadow and other streets to the N. Y & N. H. R. R. which it follows to West River. Thence it runs on the east bank of the river to Oak, which it follows to the corner of Howard ave., and from there in a straight line to the corner of Crown and Temple streets and thence to State street. This may be called the "West District." It covers six hundred and eighty acres.

The other district is bounded as follows: Beginning at the corner of Greene and Olive streets the line runs on Greene to East; thence in a straight line to the corner of Chapel and James streets, down Chapel to Poplar, Poplar to the Shore Line R. R., follows the railroad in to East street, East to State, State to Olive and Olive back to Greene street again. This may be called the "East District." It covers four hundred and thirteen acres.

These two districts cover just one-fifth, $\frac{1023}{5355}$, of the total area of the dry land in the city (exclusive of the "Annex" and Westville), but in them 70.2 per cent. of the total number of deaths occurred. A fairer comparison would be with the total population of the districts, but it is impossible now to determine it.

2. While in these districts there are comfortable dwellings and families of means, they cover also to a large extent the poorer, filthier and more wretched parts of the city.

3. The "West District" and that part of the "East District" which lies east of Mill River are not nearly so closely built and do not contain so many large tenement houses probably as the other part of the "East District," but they are not sewered to any extent, while the tenement region is. Almost all the deaths were either in a closely built tenement district or in places which were not suitably provided with sewers.

VIII. NUMBER OF FAMILIES.

The number of families in the different houses where death occurred would furnish some idea of the social condition of their inhabitants.

From the physicians' certificates it appears that in 76 houses there were 195 families or, on the average between two and three families in a house; but in some cases there was found a considerably larger number of families than was reported in the certificates and for this reason the accuracy of the whole statement is doubted.

IX. SEWERAGE.

Thirty-six of the deaths or 32.4 per cent. were on streets which had sewers laid in them and 75 or 67.6 per cent. on unsewered streets. It is stated in the Report of the New Haven Board of Health for 1882, page 14, that a majority of the population of the city live on sewered streets and if a large majority of these deaths are on unsewered streets the fact indicates a connection between the removal of filth by sewers and the lower death-rate on sewered streets.

There were 22 deaths in houses connected with the sewers, 89 in houses unconnected and two whose condition in this respect is unknown.

That is, 20 per cent. of the deaths were in houses having sewer connection and 80 per cent. in unconnected houses. This brings out still more strongly the relation between the sewerage system and the death rate.

If further indications are needed to convince one that this relation is very close they may be found by reference to the table of density of population by wards and death-rate given on page 226, noting that wards 1, 6, 7, which have by far the densest population and yet a much lower death-rate than three of the others, are very perfectly sewered, as is also ward 5, which had the lowest death-rate; while on the other hand ward 12 with the highest death-rate and sparsest population is absolutely without sewers and that ward 3 with the next highest death-rate is very imperfectly provided with them.

But of 36 deaths on streets which had sewers laid in them 22 or 61 per cent.—considerably more than one-half—were in houses having sewer connections. Perhaps the number of cases is too small for generalization yet the fact is suggestive. We have no plumbing law and it is well known that the soil pipes from sewers to houses in the poorer parts of the city are generally laid in the most careless fashion, often ignoring any precautions for the safety of those whom they are intended to benefit.

Often they have no traps and are nothing more than holes which air the main sewer at the expense of the inmates of the houses. The city takes care that the connection with the street sewer is properly made. It would seem only reasonable that the Board of Health should have authority to see that builders properly trap all house connections. That the master

plumbers of the city have petitioned the local Board of Health for their aid in securing proper legislation on this matter is a most encouraging sign.

X. WATER SUPPLY.

- 47 families used the city water.*
- 38 families used well water.
- 13 families used both city and well water.
- 13 families not ascertained.

111

There seems to be no relation between the number of deaths and the source of drinking water, and in the case of infants this would hardly be expected if they were nursed by their mothers; but when brought up by hand the milk is generally diluted somewhat with water and in this way the child might be poisoned if the well was foul.

In some of the places visited the well water was praised as being far superior to the evil-tasting city water, in other places it was complained of. Many of the wells had garbage heaps quite near, most of those examined had cesspools or privies, or both, within 30 feet of them and some much nearer. Water from wells in no worse situation apparently than some of these was found by analysis later in the season to be very foul. It seems to be a fact that very foul water *may* be drunk for a time by a family without apparent harm, but when diarrhœa, diphtheria, or typhoid breaks out, of a sudden they discover that the water is bad. But a family and especially a poor family which cannot take ice in summer and finds well water much cooler and more agreeable than city water, will often believe the well clean and good until it has been proved guilty of manslaughter.

These statistics with regard to residence, number of families, sewers, water supply, etc., give no adequate idea of the unsanitary condition of the houses where the deaths occurred. From more or less thorough personal inspection of over 120 of these houses and premises one gets a conception of the filth and misery in many of them which figures cannot give. One fourth or one fifth of them may most properly be described as nasty. More

* The city is generally supplied with water furnished by a water company and not controlled by the city.

than one-half, probably three-quarters of the houses would be regarded by anyone who reads this paper as unfit places to live in, much more unfit to bring up children in. A few, a very few, were clean, sweet-smelling, comfortable homes where one likes to see a baby face.

XI. FEEDING.

Of the 111 children who died of infantile diarrhœa 14 were nursed entirely by their mothers, 12 others were nursed less than 1 month, 5 between 1 and 2 months, 2 between 2 and 3 months, 3 between 4 and 5 months and 3 between 6 and 9 months. 5 were both nursed and bottle-fed, and of 13 cases the particulars are not known. 54 were not nursed at all. That is, out of 98 cases, 14.3 per cent. were children nursed by their mothers.

77.5 per cent. were children bottle-fed wholly or in part from the time they were 2 months old.

8.2 per cent. were children who were longer nursed than the others, but were bottle-fed at the time they were taken
sick.

100.0

Published statistics generally agree in this, that a large majority of those who die in infancy were fed by hand, that is, were fed in an unnatural way. In those countries where the death rate of children under one year of age is least (under 15 per cent. of the total number born alive in Norway, Sweden, and Ireland), the nursing of children by the mother is almost universal.

In Lower Bavaria and the Palatinate, where nursing by the mother is the exception, 50 per cent. die under one year old, while in a portion of upper Bavaria, where all the children are nursed, in spite of poverty and a harsh climate, only 25 per cent. die. A recent English writer states that "it is a well-known fact that during the Lancashire famine when no work was to be had, the infant mortality rate fell considerably, in spite of decreased earnings." "In Coventry the diarrhœal death-rate among children due to improper feeding, has been shown to vary considerably, and in proportion to the prosperity of trade being reduced two-thirds when the trade was at the slackest, and the mothers consequently thrown out of employment."

This English writer, F. E. Atkinson, Medical Officer of Health, voices the nearly unanimous opinion of medical authorities when

he says, "I believe there are very few cases where a child cannot be nursed by its own mother. Refusal to nurse in the working classes is caused by the necessity of the mother's working." It has been proposed in England that the employment of women in factories within a year after the birth of a child should be prohibited by law. In Belgium, where the government has established public nurseries for the care of the children of working women, the death rate among infants is lower than in any other country. This is largely due, no doubt, to the better care which the children receive at the nurseries, and especially in the matter of feeding.

The special dangers to which a child is exposed who is brought up by hand are manifold. In the first place, cow's milk at the best cannot be made to have the same chemical composition as mother's milk, with any amount of domestic doctoring: it is at best a food not fully suited to the needs of the infant. This unnatural food must be assimilated, too, while the digestive organs are imperfectly developed, and in a particularly sensitive condition.

Again, milk is known to be a common channel for distributing zymotic diseases. Living germs find in milk a most suitable breeding place, and if it is exposed at all to the emanations or germs from any decomposing matter—and how difficult it is to avoid this under the most favorable circumstances housekeepers can testify—it will itself receive, multiply, and transmit them.

If the milk is watered by the seller with impure water, or if his cans are washed in impure water, or if the milk after it is delivered to the family is diluted for the babe with bad water, or if it suffers contact with any noisome substance or emanations, there is great danger to the child.

Sometimes to the milk is added arrow-root or other farinaceous matters. If these are used in early infancy, before the secretion of saliva and the pancreatic fluid has begun—which alone render the assimilation of starch possible—they are of no use to the child, and if they have any effect at all it is only as irritants in the intestinal canal. Cless ascribes the high rate of infant mortality in Würtemberg (45 per cent. in the first year) to improper feeding. Its cause is "the infant-murdering Swabian meal porridge, the chief and favorite food for the nurslings of our rural population, the exact opposite of all that which furnishes an appropriate and healthful food for the new-born child, about the worst thing which human ignorance could devise as food for an infant." (Cited in Conrad's *Jahrbücher*, Jan., 1882., p. 21.)

The nursing bottle itself is too often an abomination and the cause of infantile diarrhœa. The perfect cleansing of the bottle and its tubes would tax the skill and patience of a person quite used to the handling of such apparatus. A chemist finds it difficult to cleanse for chemical uses the interior of a small glass or rubber tube. Too often for more important uses the nursing bottle with its tube is wholly neglected or simply rinsed out, and left with more or less milk and other matters adhering, which soon begin to decompose and spoil or poison the food afterward drawn through it.

In a word, the odds are enormously against the child who is brought up by hand.

In most cases the artificial food supplied to these infants who died was either cow's milk or condensed milk or a mixture. Thus, of the 84 infants who had been bottle-fed, 35 had fresh cow's milk, 24 had condensed cow's milk, 7 had a mixture of these or alternately one or the other, 2 had goat's milk and the rest had various "prepared foods" with milk.

These numerical statements with regard to infant mortality during the months named, striking as they are, seem totally inadequate to give any just notion of the points which they are intended to make clear.

Figures cannot picture squalor, they cannot describe the polluted air of tenements nor of tenement areas, they cannot reveal the sickly and diseased appearance of many of the surviving children, the dull hopeless expression on the countenances of some of the adults who are being crushed in the struggle of existence, from whom self-respect has departed or is departing, who have apparently little to live for, little to bind them to society, little to make them abhor crime or dread anarchy.

The figures do not show either as it needs to be shown, the significance of all this to those who live in purer air, who have better food and comfortable homes. What concern is it of theirs that there is this excessive mortality of infants in certain parts of the city? Why should they trouble themselves about it at all?

A few of these infants, four or five at least out of 131 cases which were inquired into, were illegitimate; perhaps ten or twelve more died at baby farms or "Children's homes," and will not be missed. But the great majority were children of parents who loved them more or less. Each was the center of a family

circle. Each was morally the cleanest and best thing in it, and the death of each was a disappointment and a sorrow. But what of it? The death of any one who has not reached the age for working, producing and helping in society, but who has the possibility of all this within him, appears in itself considered a loss to society. An infant who has cost pain and care and labor which would otherwise have been immediately remunerative to his parents, whose chances of life are increasing each day at a very rapid rate, and who then fails and dies, is a loss to his parents and to society. He has been an expense; he might have repaid it by taking his parents' place in the world, but he died insolvent.

Now it cannot be asserted that these children who died here last summer would or would not have been a help to society if they had lived. It is morally certain that some of them would have been only a hindrance. A certain number would have been drunkards, rakes, or paupers, and would have gone from the almshouse to the hospital and from the hospital back to the almshouse and in the end to the potter's field.

Possibly one will conclude, all things considered, that the world has lost no more than it has gained by these deaths and that both the infants and the survivors are to be congratulated. In fact the subject is often dismissed in this way: "Poor things! They are saved a great deal of misery. Many of them were children of the very poor and the vicious. They are better dead than alive." Now this is all very true and very narrow.

The statistics given are chiefly important, not for what they tell of those who are buried, but for what they indicate of those who are living; not as a tale of past misfortune, but of present misery and future woe; distress in which either those who are now in comfortable condition, or their descendants, will surely have a share.

Two hundred and fifty-nine deaths mean also a large number—many times that number—of sicknesses. They mean that the same things which destroyed so many have poisoned and crippled others so that they will lead lives of discomfort to themselves and their neighbors by reason of more or less enfeebled constitutions. They mean that many are growing up to be kept from starving or dying of disease by the money which the more thrifty are working to earn.

More than this; these deaths mean that as a result of overcrowding, uncleanness and improper feeding, many have

enfeebled nervous organizations which constantly crave stimulant and excitement to rouse them from their usual state of depression and which render them an easier prey to the attacks of moral evil. Drunkenness and lust will gather many victims who were saved from death in infancy and who will scatter the seeds of depravity and disease wherever they and their offspring go.

They mean besides that during the prevalence of epidemics such as cholera, yellow fever, or typhoid, the places where nearly all these infant deaths occurred, and where, as has been shown, uncleanness prevails, will be localities of special danger to the whole city, becoming centers from which the diseases will spread. At such times no places however clean will be safe while near them are these plague spots, the recruiting stations of disease.

They mean once more that in the houses which are no homes by reason of filth and intemperance, social discontent and thoughts of revolution will live as they cannot live in real homes. "Of a truth," says a recent writer, "the matter of house accommodation for the poor is the question of questions both for philanthropists and for statesmen, as here are the breeding dens of the roughs of all countries, nations, and tongues ; in the single rooms are the seed-beds of disease and revolution."

The object of this paper has been gained if the facts with regard to infant mortality during the last summer have been fairly stated, and some of the causes of it and their significance as regards society have been indicated. It is an unpleasant, unsavory subject, but not a hopeless matter.

Nothing is more certain than that these deaths and the things which cause them and which at the same time help largely to fill our hospitals, alms-houses, and jails, are to a large degree preventable, and to prevent them, or rather to do away with the causes that led to them, is the aim of all public sanitary effort and legislation.

This endeavor is largely prompted by self-interest. If men will not help others out of ignorance and filth for the others' sakes, they must do it to some extent for their own sakes, in order to preserve the social fabric. The public knows that it cannot afford as a matter of dollars and cents, to be visited by such a scourge as yellow fever or cholera often has been. So when such a disaster is felt to be imminent, it is easy to secure attention and an appropriation for a spasmodic effort at cleanliness,—for the removal of filth-pockets that have been poisoning the public for

months and years unheeded. But in the absence of any immediate and personal peril it is not so easy to see that the mere destruction of lives, shocking as that is, is not the thing most to be dreaded; that the slow undermining of the health of a portion of the community by foul air and water and soil and improper food, the development of ill-regulated appetites fostered at least by the same things, the loss of self-respect and of hopefulness which are certainly attendant evils, that all these are things more terrible to those who immediately suffer and in the end to society itself than loss of life by war or sudden pestilence.

The question of the removal and destruction of filth is the most serious question of the day, the "conflict of civilization with its own wastes" is still a doubtful one.

It is not the purpose here to describe in detail the way by which a happy issue out of the present state of things is to be secured. The golden age is not to be brought again wholly by sanitation. There is trouble with all of us because of disregard of eternal laws vastly wider in their bearing than those which govern the health of our bodies. But a great need of all of us, without exception, is education in sanitary matters. To teach children, and adults as well, the knowledge and practice of personal and public hygiene, will work most efficiently towards eradicating all of that intricately correlated group of evils, poverty, squalor, disease intemperance and lust, every member of which is an effect as well as a cause.

Such education will create a public sentiment which will demand legislation on matters wherein the State and city for their self-preservation have a right to legislate, and will enforce it. It will teach builders and house-owners that it is for their own interest to construct homes and not death-traps for their tenants, and it will help to make tenants, even the poorest, appreciate what is done by landlords in this direction and understand that their lives to a great degree are in their own hands, and that the penalty of carelessness in regard to their persons or their premises is misery and death.

When we have come to see that much of the death at the present day is certainly preventable and have set ourselves in earnest to prevent it, the day will be hastened when "there shall no more thence be an infant of days nor an old man that hath not filled his days; for the child shall die a hundred years old."

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